

There are doubtless other records, but sufficient has been given to show that various bees and fossorial Hymenoptera have curious sleeping habits. The exposed position and the use of the mandibles are very remarkable. That a bee or wasp can support its body horizontally all night by the jaws alone seems almost beyond belief. It would seem to indicate that their sleep is of an hypnotic sort. A great majority of the known cases are males. Where do the ladies sleep? Again why do different genera associate at the same hotel? Indeed the observations lead to dozens of puzzling questions whose solutions can only be found by future field observations.

BORING NOCTUID LARVÆ.

BY HENRY BIRD.

Self-preservation being one of nature's primary laws would incline us to believe that a boring, and consequently hidden larva, had selected a strategic position far ahead of the exposed feeders, and that we might expect to find them or their imagoes as predominate species. The act of boring doubtless dates back to the earliest larval conditions and with our Noctuids many still cling to this trait, though it is subject to various modifications. But when it comes to finding the imagoes of the more astute borers, at large in nature, we simply do not find them, and attention has to be directed to their larvæ, where more prolific results await us. Here there are many evidences at hand that would tend to disprove any theories of a charmed or undisturbed existence, and a host of facts sufficiently divergent to interest us become apparent, so that hypothetical lines may be dropped to await a better information. Among the more important Noctuids belonging to the Agrotid and allied classes, a more or less universal habit of burrowing in the ground by day or seeking a similar seclusion under convenient objects, reflects perhaps a retention of ancestral propensities. Certainly one species, not far removed here, *Macronoctua onusta*, can claim distinction to being a full-fledged borer, and the heavy Noctuid pattern points back surely to an early type. Yet the larva shows a very full line of development and constitutes a good example of what we may expect of such conditions. A general infor-

mation of this species seems lacking, which should not be, as it is widely distributed and common, if sought aright. Its discovery at Rye happened as one of those pleasant surprises which ever await the borer investigator and which, at the same time, often proves how much of our familiar surroundings are still in the dark to us. In the stalks, and later the roots, of *Iris versicolor*, these larvæ thrive, and although the fact had been chronicled by Dr. Thaxter years ago, the information seemed to have been overlooked and a later reference to "german lily" did not assist. The species is slow in maturing, running well through the summer in the completion of its larval stages and is afflicted by a more serious state of parasitism than any other known to us. The moth emerges in September (if your supply of larvæ were sufficiently numerous perhaps you can use the plural in speaking of your imagines), and furnishes a striking if not handsome example of our native owlets. Its cylindrical, smooth, semi-translucent larva well represents what we have to expect of the true borers, for perforce they cannot have furry coats, nor humps nor horns, which help us so much in distinguishing some others. Such characters appear as of protective or repellant benefit and with the *Heliothinii* whose larvæ burrow in seedpods or capsules, in some of the few cases known, are colored and striped in such manner as to give protective results. What nicer mimicry can there be than the mature *Alaria florida* larva beside its partly consumed seed vesicle? If this larva has 'photographed the color of its surroundings,' what can we say of the young Gortynæ who are the true aristocrats of the boring fraternity? Here the mature borers come under the conventional semitransparent class, but in early life shows contrasting colors in the form of longitudinal stripes which stop abruptly at its middle. It would look as though their ancestors may have lived within some encircling protection while the extremities were left exposed. The larva of the common bag-worm, shows, on its exposed thoracic joints, lines quite similar to those of the young Gortynæ and it is within bounds to believe the latter possess their's from a like exposure.

The Nonagrid and other partly aquatic forms working in reeds and water plants offer most interesting study and are in need of much further scrutiny. An unrecorded note of the extreme shortness of pupal stage, in *Nonagria oblonga*, may be favorable information of the species, as it is natural to desire quick realizations after the trouble of the breeding cage. From seven to nine days was the record of one

brood, the new pupa shell with its great clypeal spur seems scarcely to get thoroughly hardened before the imago is ready to burst forth.

For an examination of tubercles and the specially developed protective plates, *Achatodes zeæ* furnishes a good delineation. A record of the species from the middle West, stating the pupa was formed within the burrows, when boring *Sambucus*, is quite the reverse of what occurs in this locality where the pupa is always formed in the ground.

After passing the representative borers there are still others that burrow or mine in their various food substances. Some, like *Scopelosoma*, only do so in their earliest stages.

Whatever attraction boring larvæ may have for the collector or student, one point worth remembering is the prevalent localization that necessarily exists with many of the species, so that unfamiliar territory will quite often disclose an unexpected guest, perchance some coveted rarity.

DESCRIPTIONS OF NEW MALLOPHAGA FROM NEBRASKA.

By M. A. CARRIKER, JR.

(PLATES XX-XXII.)

For a number of years the writer has been greatly interested in the study of ornithology, and having in the meantime begun the study of entomology, he naturally became interested in the insect parasites of birds, namely, the group known as Mallophaga. In addition to the writer's own collection he has had access to that of the University of Nebraska and also to the private collections of Professor Lawrence Bruner and J. C. Crawford, Jr. I wish to express my thanks to the owners of these collections for their use and especially to Professor Vernon L. Kellogg, of Leland Stanford University, Cal., for his kindness in looking over the manuscript and drawings before publication, and for his helpful suggestions, most of which have been followed out. The types and co-types from which these forms were described are located as follows: In the University of Nebraska collection are types of *Nirmus trimarginis*, *Nirmus biocellatus* var. *nigropictus*, *Nirmus angustifrons*, *Colpocephalum quadrimaculatus*, *Nitzschia pulicaris* var.